

Attorney's Docket No.: 11145-023US1

## FACSIMILE

ATTN: JEREMY FLEMING

FAX NO: (703) 305-2919

Number of pages including this page 44

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JAN 07 2003

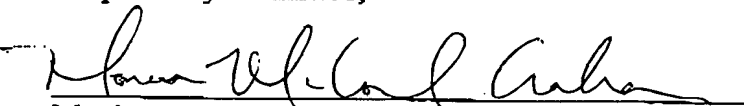
PCT SPECIAL  
PROGRAMS OFFICEApplicant : Leif Andersson et al.  
Serial No. : 10/070,794  
Filed : March 8, 2002Art Unit :  
Examiner :Title : VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES  
ENCODING THE SAME, AND USES THEREOFCommissioner for Patents  
Washington, DC 20231

Dear Mr. Fleming:

As you discussed today with my secretary, Kathy Sanderson, attached to this facsimile communication cover sheet is a copy of the Response to Notification of Missing Requirements which was filed with the U.S. Patent and Trademark Office on October 4, 2002. You will note from the express mail receipt that this response was mailed to Box Sequence, U.S. Patent and Trademark Office, P.O. Box 2327, Arlington, VA 22202.

Respectfully submitted,

Date: January 7, 2003

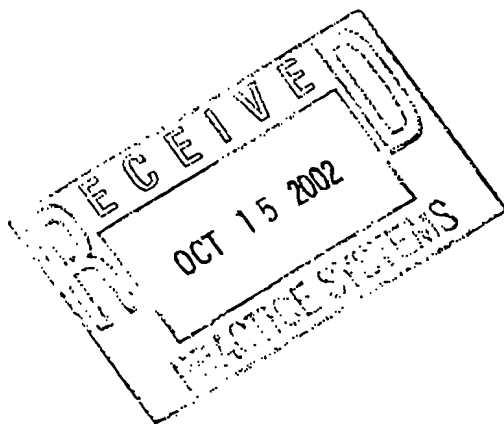
  
Monica McCormick Graham, Ph.D.  
Reg. No. 42,600Fish & Richardson P.C., P.A.  
60 South Sixth Street  
Suite 3300  
Minneapolis, MN 55402  
Telephone: (612) 335-5070  
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60121273.doc

NOTE: This facsimile is intended for the addressee only and may contain privileged or confidential information. If you have received this facsimile in error, please immediately call us collect at (612) 335-5070 to arrange for its return. Thank you.

MMG

PTO6 Rec'd PCT/PTO 04 OCT 2002

Attorney's Docket No. 11145-023US1	Express Mail Label No. EV115424896US	Mailing Date October 4, 2002	<i>For PTO Use Only Do Not Mark in This Area</i>
Application No. 10/070,794	Filing Date March 8, 2002	Attorney/Secretary Init MMG/kjs	
Title of the Invention VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES ENCODING THE SAME, AND USES THEREOF			
Applicant Leif Andersson et al.			
Enclosures - Response to Notification of Missing Requirements (1 page) - Copy of Notification of Missing Requirements (2 pages) - Combined Declaration and Power of Attorney (4 pages) - Preliminary Amendment (6 pages) - Verified Statement Under 37 CFR §1.821(f) (1 page) - CRF Diskette of Sequence Listing - Paper Copy of the Sequence Listing (24 pages) - Petition for Two-Month Extension of Time (1 page) - Check for \$265			



Attorney's Pocket No.: 11145-023US1

## IN THE UNITED STATES RECEIVING OFFICE

Applicant : Leif Andersson et al.  
Serial No. : 10/070,794  
Filed : March 8, 2002  
Title : VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES  
ENCODING THE SAME, AND USES THEREOF

**BOX PCT**

Commissioner for Patents  
Washington, DC 20231

RESPONSE TO NOTIFICATION OF MISSING REQUIREMENTS

Responsive to the Notification of Missing Requirements under 35 U.S.C. 371 mailed  
June 4, 2002 (copy enclosed), Applicant as a small entity submits herewith the following:

- ☒ Check for \$265 in payment of the \$65 surcharge for late filing of the basic filing fee and/or declaration and the two-month extension fee of \$200;
- ☒ Combined Declaration and Power of Attorney in compliance with 37 CFR §1.63;
- ☒ Verified Statement Under 37 CFR §1.821(f);
- ☒ Sequence listing in computer readable form;
- ☒ A paper copy of the sequence listing;
- ☒ Preliminary Amendment; and
- ☒ Petition for Two-Month Extension of Time.

It is understood that this perfects the application and no additional papers or filing fees are required. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 10/4/02

Fish & Richardson P.C., P.A.  
60 South Sixth Street, Suite 3300  
Minneapolis, MN 55402  
Telephone: (612) 335-5070  
Facsimile: (612) 288-9696  
60105919.doc

  
Monica McCormick Graham, Ph.D.  
Reg. No. 42,600

## CERTIFICATE OF MAILING BY EXPRESS MAIL

Express Mail Label No. EV115424896US

October 4, 2002  
Date of Deposit



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents, Box PCT  
United States Patent and Trademark Office  
Washington, D.C. 20231  
www.uspto.gov

USE  
MMG

U.S. APPLICATION NUMBER NO.

10/070,794

FIRST NAMED APPLICANT

Leif Andersson

ATTY. DOCKET NO.

11145-023US1

INTERNATIONAL APPLICATION NO.

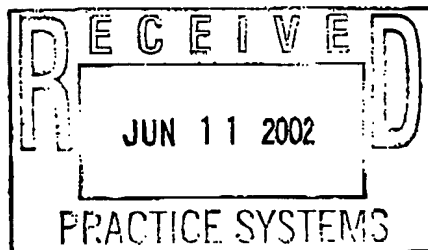
PCT/EP00/09896

I.A. FILING DATE

09/11/2000

PRIORITY DATE

Mark S Ellinger  
Fish & Richardson  
60 South Sixth Street  
Suite 3300  
Minneapolis, MN 55402



CONFIRMATION NO. 9287

371 FORMALITIES LETTER



\*OC000000008210599\*

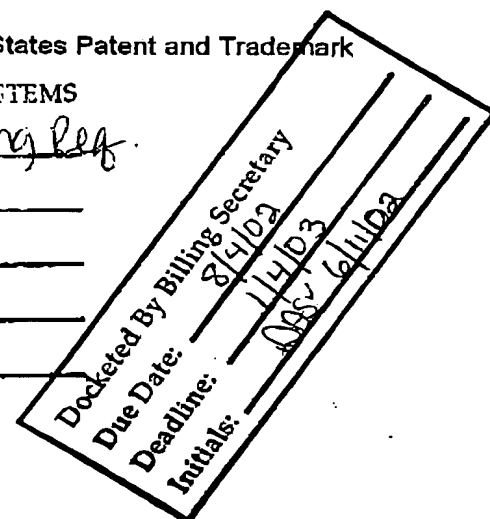
Date Mailed: 06/04/2002

### NOTIFICATION OF MISSING REQUIREMENTS UNDER 35 U.S.C. 371 IN THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

The following items have been submitted by the applicant or the IB to the United States Patent and Trademark Office as an Elected Office (37 CFR 1.495):

- U.S. Basic National Fees
- Indication of Small Entity Status
- Biochemical Sequence Listing
- Copy of IPE Report
- Copy of references cited in ISR
- Copy of the International Application
- Copy of the International Search Report
- Preliminary Amendments
- Small Entity Statement

DOCKETED BY PRACTICE SYSTEMS

ACTION: PCT 2m Missing Req.BASE: 10-4-02DUE: 8-4-02DEADLINE: 1-4-03INITIALS: Jan

The following items **MUST** be furnished within the period set forth below in order to complete the requirements for acceptance under 35 U.S.C. 371:

- Oath or declaration of the inventors, in compliance with 37 CFR 1.497(a) and (b), identifying the application by the International application number and international filing date.
- \$65 Surcharge for providing the oath or declaration later than the appropriate 30 months from the priority date (37 CFR 1.492(e)) is required.

**ALL OF THE ITEMS SET FORTH ABOVE MUST BE SUBMITTED WITHIN TWO (2) MONTH FROM THE DATE OF THIS NOTICE OR BY 22 or 32 MONTHS (where 37 CFR 1.495 applies) FROM THE PRIORITY DATE FOR THE APPLICATION, WHICHEVER IS LATER. FAILURE TO PROPERLY RESPOND WILL RESULT IN ABANDONMENT.**

The time period set above may be extended by filing a petition and fee for extension of time under the provisions of 37 CFR 1.136(a).

The following items **MUST** be furnished within the period set forth below:

• The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 CFR 1.821-1.825 for the following reason(s):

- A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 CFR 1.821(e).
- A copy of the "Sequence Listing" in computer readable form has been submitted. The content of the computer readable form, however, does not comply with the requirements of 37 CFR 1.822 and/or 1.832, as indicated on the attached marked-up copy of the "Raw Sequence Listing."
- **APPLICANT MUST PROVIDE:**
  - An initial or substitute computer readable form (CRF) of the "Sequence Listing."
  - An initial or substitute paper copy or compact disc of the "Sequence Listing," as well as an amendment directing its entry into the specification.

• For questions regarding compliance to 37 CFR 1.821-1.825 requirements, please contact:

- For Rules Interpretation, call (703) 308-4216
- To Purchase PatentIn Software, call (703) 306-2600
- For PatentIn Software Program Help, call (703) 306-4119 or e-mail at [patin21help@uspto.gov](mailto:patin21help@uspto.gov) or [patin3help@uspto.gov](mailto:patin3help@uspto.gov)

**SUMMARY OF FEES DUE:**

Total additional fees required for this application is \$65 for a Small Entity:

- \$65 Late oath or declaration Surcharge.
- A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 CFR 1.821(e).
- A copy of the "Sequence Listing" in computer readable form has been submitted. The content of the computer readable form, however, does not comply with the requirements of 37 CFR 1.822 and/or 1.832, as indicated on the attached marked-up copy of the "Raw Sequence Listing."

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

*A copy of this notice **MUST** be returned with the response.*

MAMIE P PERSON

Telephone: (703) 305-3737

**PART 1 - ATTORNEY/APPLICANT COPY**

U.S. APPLICATION NUMBER NO.	INTERNATIONAL APPLICATION NO.	ATTY. DOCKET NO.
10/070,794	PCT/EP00/09896	11145-023US1

FORM PCT/DO/EO/905 (371 Formalities Notice)

Docketed By	Billing Secretary
Due Date:	8/4/02
Deadline:	11/4/03
Initials:	DAS 6/11/02

**DOCKETED BY PRACTICE SYSTEMS**

**ACTION:** Seq. Listing-2u

**BASE:** 6-4-02

**DUE:** 8-4-02

**DEADLINE:** 1-4-03

**NOTES:** gm

Attorney Docket No.: 11145-023US1

**COMBINED DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES ENCODING THE SAME, AND USES THEREOF, the specification of which:

☐ is attached hereto.

☒ was filed on March 8, 2002 as Application Serial No. 10/070,794 and was amended on \_\_\_\_\_.

☐ was described and claimed in PCT International Application No. \_\_\_\_\_ filed on \_\_\_\_\_ and as amended under PCT Article 19 on \_\_\_\_\_.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information I know to be material to patentability in accordance with Title 37, Code of Federal Regulations, §1.56.

I hereby claim the benefit under Title 35, United States Code, §119(e)(1) of any United States provisional application(s) listed below:

U.S. Serial No.	Filing Date	Status
none		

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose all information I know to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56(a) which became available between the filing date of the prior application and the national or PCT international filing date of this application:

U.S. Serial No.	Filing Date	Status
none		

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

Country	Application No.	Filing Date	Priority Claimed
WIPO	PCT/EP00/09896	September 11, 2000	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
European Patent Office	EP 00401388.4	May 18, 2000	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
European Patent Office	EP 99402236.6	September 10, 1999	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Attorney Docket No.: 11145-023US1

**Combined Declaration and Power of Attorney**

Page 2 of 4 Pages

I hereby appoint the following attorneys and/or agents to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Mark S. Ellinger, Ph.D., Reg. No. 34,812  
Wayne E. Willenberg, Reg. No. 28,488  
H. Sanders Gwin, Jr., Reg. No. 33,242  
Ronald C. Lundquist, Ph.D., Reg. No. 37,875  
J. Patrick Finn III, Ph.D., Reg. No. 44,109  
Monica McCormick Graham, Ph.D., Reg. No. 42,600  
Arlene Hornilla, Reg. No. 44,776  
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Dorothy P. Whelan, Reg. No. 33,814  
Richard J. Anderson, Reg. No. 36,732  
Stephen R. Schaefer, Reg. No. 37,927  
John A. Dragseth, Reg. No. 42,497  
M. Angela Parsons, Ph.D., Reg. No. 44,282  
J. Richard Soderberg, Reg. No. 43,352  
Chad A. Hanson, Ph.D., Reg. No. 44,737  
Greg A. McAllister, Reg. No. 47,779  
Ruffin B. Cordell, Reg. No. 33,487

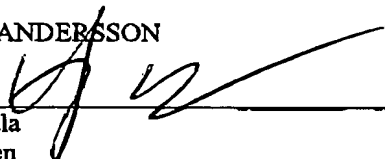
Address all telephone calls to Mark S. Ellinger, Ph.D. at telephone number (612) 335-5070.

Address all correspondence to Mark S. Ellinger, Ph.D. at:

FISH & RICHARDSON P.C., P.A.  
60 South Sixth Street  
Suite 3300  
Minneapolis, MN 55402

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patents issued thereon.

Full Name of Inventor: LEIF ANDERSSON

Inventor's Signature: 

Date: 11.09.02

Residence Address:

Uppsala

Citizenship:

Sweden

Post Office Address:

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752 39 Uppsala  
Sweden

Full Name of Inventor: CHRISTIAN LOOFT

Inventor's Signature: 

Date: 14.8.02

Residence Address:

Bokelholm

Citizenship:

Germany

Post Office Address:


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24802 Bokelholm  
Germany

Attorney Docket No.: 11145-023US1

**Combined Declaration and Power of Attorney**

Page 3 of 4 Pages

Full Name of Inventor: ERNST KALM

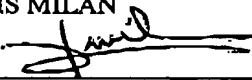
Inventor's Signature: Date: 19.08.2002

Residence Address: Achterwehr

Citizenship: Germany

Post Office Address: Schmalholt 1  
24239 Achterwehr  
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Full Name of Inventor: DENIS MILAN

Inventor's Signature: Date: 10-08-2002

Residence Address: Labege

Citizenship: France

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France

Full Name of Inventor: ANNIE ROBIC

Inventor's Signature: Date: 29.08.2002

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Citizenship: France

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France

Full Name of Inventor: CLAIRE ROGEL-GAILLARD

Inventor's Signature: Date: 5/08/2002

Residence Address: Paris

Citizenship: France

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France

Full Name of Inventor: NATHALIE IANNUCELLI

Inventor's Signature: Date: 28/08/02

Residence Address: Castanet-Tolosan

Citizenship: France

Post Office Address: 7, boulevard des Alouettes  
F-31320 Castanet-Tolosan  
France

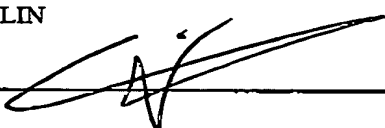


Attorney Docket No.: 11145-023US1

**Combined Declaration and Power of Attorney**

Page 4 of 4 Pages

Full Name of Inventor: JOËL GELLIN

Inventor's Signature: Date: 28 April 2002

Residence Address:

Auzeville

Citizenship:

France

Post Office Address:

8, allée des Amazones

F-31320 Auzeville

France

Full Name of Inventor: PASCALE LE ROY

Inventor's Signature: Date: 22 April 2002

Residence Address:

Massy

Citizenship:

France


Post Office Address:

32, avenue Saint Marc

F-91300 Massy

France

Full Name of Inventor: PATRICK CHARDON

Inventor's Signature: Date: 1 September 2002

Residence Address:

Vauhallan

Citizenship:

France

Post Office Address:

17, rue de Petite Fontaine

F-91430 Vauhallan

France

Attorney's Office No.: 11145-023US1

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Leif Andersson et al.                      Art Unit : Unknown  
Serial No. : 10/070,794                                  Examiner : Unknown  
Filed : March 8, 2002  
Title : VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES  
ENCODING THE SAME, AND USES THEREOF

**BOX SEQUENCE**

U.S. Patent and Trademark Office  
P.O. Box 2327  
Arlington, VA 22202

VERIFIED STATEMENT UNDER 37 CFR §1.821(f)

I, Judith A. Wasilkus, declare that I personally prepared the paper and the computer-readable copy of the Sequence Listing filed herewith for the above-identified application and that the content of both is the same.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of The United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Date: October 4, 2002

Judith A. Wasilkus  
Judith A. Wasilkus

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60 South Sixth Street, Suite 3300  
Minneapolis, MN 55402  
(612) 335-5070 telephone  
(612) 288-9696 facsimile

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## CERTIFICATE OF MAILING BY EXPRESS MAIL

Express Mail Label No. EV115424896USDate of Deposit October 4, 2002

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225 FRANKLIN STREET  
BOSTON, MA 02110-2804

SEQUENCE LISTING UNDER 37 CFR 1.824

Applicant: Leif Andersson et al.

Serial No.: 10/070,794

Filed: March 8, 2002

For: VARIANTS OF THE GAMMA CHAIN OF  
AMPK, DNA SEQUENCES ENCODING THE  
SAME, AND USES THEREOF

Docket No.: 11145-023US1      Date: 9/23/2002

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## SEQUENCE LISTING

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agaatccgtg ggaaacggag ggccaaagcc ttgagatgga caaggcagaa gtcggtggag 120
gaagggggagc caccaggtca ggggggaaggt ccccggtcca ggccaactgc tgagtccacc 180
gggctggagg ccacattccc caagaccaca cccttggctc aagctgatcc tgccgggggtg 240
ggcactccac caacaggggtg ggactgcctc ccctctgact gtacagcctc agctgcaggc 300
tccagcacag atgatgtgga gctggccacg gagttcccag ccacagagge ctgggagtg 360
gagctagaag gcctgctgga agagaggcct gccctgtgcc tgtcccgcga ggccccattt 420
cccaagctgg gctgggatga cgaactgcgg aaaccggcg cccagatcta c atg cgc 477
                                         Met Arg
                                         1

```

```

ttc atg cag gag cac acc tgc tac gat gcc atg gca act agc tcc aag 525
Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr Ser Ser Lys
      5              10              15

```

```

cta gtc atc ttc gac acc atg ctg gag atc aag aag gcc ttc ttt gct 573
Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala Phe Phe Ala
      20              25              30

```

```

ctg gtg gcc aac ggt gtg cgg gca gcc cct cta tgg gac agc aag aag 621
Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp Ser Lys Lys
      35              40              45              50

```

```

cag agc ttt gtg ggg atg ctg acc atc act gac ttc atc ctg gtg ctg 669
Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile Leu Val Leu
      55              60              65

```

```

cat cgc tac tac agg tcc ccc ctg gtc cag atc tat gag att gaa caa 717
His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu Ile Glu Gln
      70              75              80

```

```

cat aag att gag acc tgg agg gag atc tac ctg caa ggc tgc ttc aag 765
His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly Cys Phe Lys
      85              90              95

```

```

cct ctg gtc tcc atc tct cct aat gat agc ctg ttt gaa gct gtc tac 813
Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val Tyr
      100              105              110

```

```

acc ctc atc aag aac cgg atc cat cgc ctg cct gtt ctt gac ccg gtg 861
Thr Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro Val
      115              120              125              130

```



tca ggc aac gta ctc cac atc ctc aca cac aaa cgc ctg ctc aag ttc	909
Ser Gly Asn Val Leu His Ile Leu Thr His Lys Arg Leu Leu Lys Phe	
135 140 145	
ctg cac atc ttt ggt tcc ctg ctg ccc cgg ccc tcc ttc ctc tac cgc	957
Leu His Ile Phe Gly Ser Leu Leu Pro Arg Pro Ser Phe Leu Tyr Arg	
150 155 160	
act atc caa gat ttg ggc atc ggc aca ttc cga gac ttg gct gtg gtg	1005
Thr Ile Gln Asp Leu Gly Ile Gly Thr Phe Arg Asp Leu Ala Val Val	
165 170 175	
ctg gag aca gca ccc atc ctg act gca ctg gac atc ttt gtg gac cgg	1053
Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe Val Asp Arg	
180 185 190	
cgt gtg tct gca ctg cct gtg gtc aac gaa tgt ggt cag gtc gtg ggc	1101
Arg Val Ser Ala Leu Pro Val Val Asn Glu Cys Gly Gln Val Val Gly	
195 200 205 210	
ctc tat tcc cgc ttt gat gtg att cac ctg gct gcc cag caa acc tac	1149
Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln Thr Tyr	
215 220 225	
aac cac ctg gac atg agt gtg gga gaa gcc ctg agg cag agg aca cta	1197
Asn His Leu Asp Met Ser Val Gly Glu Ala Leu Arg Gln Arg Thr Leu	
230 235 240	
tgt ctg gag gga gtc ctt tcc tgc cag ccc cac gag agc ttg ggg gaa	1245
Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Ser Leu Gly Glu	
245 250 255	
gtg atc gac agg att gct cgg gag cag gta cac agg ctg gtg cta gtg	1293
Val Ile Asp Arg Ile Ala Arg Glu Gln Val His Arg Leu Val Leu Val	
260 265 270	
gac gag acc cag cat ctc ttg ggc gtg gtc tcc ctc tcc gac atc ctt	1341
Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser Asp Ile Leu	
275 280 285 290	
cag gca ctg gtg ctc agc cct gct ggc atc gat gcc ctc ggg gcc tga	1389
Gln Ala Leu Val Leu Ser Pro Ala Gly Ile Asp Ala Leu Gly Ala	
295 300 305	
gaagatctga gtcttcaatc ccaagccaac tgcacactgg aagccaatga aggaattgag	1449
aacagcttca tttccccaac cccaatttgc tggttcagct atgattcagg cttcttcagc	1509
cttccaaaat tgcctttgcc ttactttgtgc tcccagaacc cttcgggcat gccagtgca	1569
ccatgggatg atgaaattaa ggagaacagc tgagtcaagc ttggaggtcc ctgaaccaga	1629
ggcactagga ttaccccagg gccatctgtg ctccatgccc gccatcccc ttgccgcctg	1689
actgggtcgg atggccccag tgggtttagt cagggcttct ggattcctcg gtttctgggc	1749

tacctatggc ttcagccttc agctcctggg agtcccagct gttgttccca gcaacgtcgc 1809  
 cactgccctc ctactctcca ggctttgtca tttcaaggct gctgaaatgc tgcatttcag 1869  
 gggccaccat ggagcagccg ttatttatag aactgcctgt tggaggtggg gagtcctccc 1929  
 tccattcttg tccagaaaaac tccttagctc tcgcagttag ccatgttctt agtctccagg 1989  
 gatggatggc cttgtatatg gacccctgag aatgagcaat tgagaaaaca aaacaaaagg 2049  
 aacaatccat gaacttagat tttattgggt tcaactcaaaa tgctgcagtc atttgacctg 2109

&lt;210&gt; 4

&lt;211&gt; 305

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 4

Met	Arg	Phe	Met	Gln	Glu	His	Thr	Cys	Tyr	Asp	Ala	Met	Ala	Thr	Ser
1				5					10					15	
Ser	Lys	Leu	Val	Ile	Phe	Asp	Thr	Met	Leu	Glu	Ile	Lys	Lys	Ala	Phe
			20					25						30	
Phe	Ala	Leu	Val	Ala	Asn	Gly	Val	Arg	Ala	Ala	Pro	Leu	Trp	Asp	Ser
		35					40						45		
Lys	Lys	Gln	Ser	Phe	Val	Gly	Met	Leu	Thr	Ile	Thr	Asp	Phe	Ile	Leu
		50				55					60				
Val	Leu	His	Arg	Tyr	Tyr	Arg	Ser	Pro	Leu	Val	Gln	Ile	Tyr	Glu	Ile
	65				70					75					80
Glu	Gln	His	Lys	Ile	Glu	Thr	Trp	Arg	Glu	Ile	Tyr	Leu	Gln	Gly	Cys
			85						90					95	
Phe	Lys	Pro	Leu	Val	Ser	Ile	Ser	Pro	Asn	Asp	Ser	Leu	Phe	Glu	Ala
			100					105						110	
Val	Tyr	Thr	Leu	Ile	Lys	Asn	Arg	Ile	His	Arg	Leu	Pro	Val	Leu	Asp
		115					120					125			
Pro	Val	Ser	Gly	Asn	Val	Leu	His	Ile	Leu	Thr	His	Lys	Arg	Leu	Leu
			130			135					140				
Lys	Phe	Leu	His	Ile	Phe	Gly	Ser	Leu	Leu	Pro	Arg	Pro	Ser	Phe	Leu
	145				150					155					160
Tyr	Arg	Thr	Ile	Gln	Asp	Leu	Gly	Ile	Gly	Thr	Phe	Arg	Asp	Leu	Ala
			165						170					175	
Val	Val	Leu	Glu	Thr	Ala	Pro	Ile	Leu	Thr	Ala	Leu	Asp	Ile	Phe	Val
			180					185					190		

Asp Arg Arg Val Ser Ala Leu Pro Val Val Asn Glu Cys Gly Gln Val  
 195 200 205

Val Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln  
 210 215 220

Thr Tyr Asn His Leu Asp Met Ser Val Gly Glu Ala Leu Arg Gln Arg  
 225 230 235 240

Thr Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Ser Leu  
 245 250 255

Gly Glu Val Ile Asp Arg Ile Ala Arg Glu Gln Val His Arg Leu Val  
 260 265 270

Leu Val Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser Asp  
 275 280 285

Ile Leu Gln Ala Leu Val Leu Ser Pro Ala Gly Ile Asp Ala Leu Gly  
 290 295 300

Ala  
 305

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 <213> Sus scrofa

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 ggaatttcaa gtcagccaac 20

<210> 6  
 <211> 20  
 <212> DNA  
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<400> 6  
 cttcaaaaaga ccgtgctact 20

<210> 7  
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<400> 7  
 ctgggaacct ctatatgctg 20

<210> 8  
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<400> 8  
tagggaaata caaatcacag 20

<210> 9  
<211> 20  
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<400> 9  
ctccagctca caggatgaca 20

<210> 10  
<211> 26  
<212> DNA  
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<400> 10  
gtttctgcag ctttagcatc tattcc 26

<210> 11  
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<400> 11  
gaagtatect gggcttctga 20

<210> 12  
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<400> 12  
gtttctccag gtttccagac atccac 26

<210> 13  
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gcttctgtct gccctactt 20

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<400> 14  
gtttctaagt tctactgtaa gacacc 26

<210> 15  
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<400> 15  
ccaagctgtg gtggctgaat 20

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caaactcttc taggcgtgt 19

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gtttctggaa cttccatatg ccatgg 26

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agccgtgggc atcgttgg 18

<210> 26  
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<400> 26  
agaaggagac agacagggcga 21

<210> 27  
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&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1395)

&lt;400&gt; 27

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Met Ser Phe Leu Glu Gln Gly Glu Ser Arg Ser Trp Pro Ser Arg Ala	
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gta acc acc agc tca gaa aga agc cat ggg gac cag ggg aac aag gcc	96
Val Thr Thr Ser Ser Glu Arg Ser His Gly Asp Gln Gly Asn Lys Ala	
20 25 30	
tct aga tgg aca agg cag gag gat gta gag gaa ggg ggg cct ccg ggc	144
Ser Arg Trp Thr Arg Gln Glu Asp Val Glu Glu Gly Gly Pro Pro Gly	
35 40 45	
ccg agg gaa ggt ccc cag tcc agg cca gtt gct gag tcc acc ggg cag	192
Pro Arg Glu Gly Pro Gln Ser Arg Pro Val Ala Glu Ser Thr Gly Gln	
50 55 60	
gag gcc aca ttc ccc aag gcc aca ccc ttg gcc caa gcc gct ccc ttg	240
Glu Ala Thr Phe Pro Lys Ala Thr Pro Leu Ala Gln Ala Ala Pro Leu	
65 70 75 80	
gcc gag gtg gac aac ccc cca aca gag cgg gac atc ctc ccc tct gac	288
Ala Glu Val Asp Asn Pro Pro Thr Glu Arg Asp Ile Leu Pro Ser Asp	
85 90 95	
tgt gca gcc tca gcc tcc gac tcc aac aca gac cat ctg gat ctg ggc	336
Cys Ala Ala Ser Ala Ser Asp Ser Asn Thr Asp His Leu Asp Leu Gly	
100 105 110	
ata gag ttc tca gcc tcg gcg gcg tcg ggg gat gag ctt ggg ctg gtg	384
Ile Glu Phe Ser Ala Ser Ala Ala Ser Gly Asp Glu Leu Gly Leu Val	
115 120 125	
gaa gag aag cca gcc ccg tgc cca tcc cca gag gtg ctg tta ccc agg	432
Glu Glu Lys Pro Ala Pro Cys Pro Ser Pro Glu Val Leu Leu Pro Arg	
130 135 140	
ctg ggc tgg gat gat gag ctg cag aag ccg ggg gcc cag gtc tac atg	480
Leu Gly Trp Asp Asp Glu Leu Gln Lys Pro Gly Ala Gln Val Tyr Met	
145 150 155 160	
cac ttc atg cag gag cac acc tgc tac gat gcc atg gcg acc agc tcc	528
His Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr Ser Ser	
165 170 175	
aaa ctg gtc atc ttc gac acc atg ctg gag atc aag aag gcc ttc ttt	576
Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala Phe Phe	
180 185 190	
gcc ctg gtg gcc aac ggc gtc cga gcg gca cct ttg tgg gac agc aag	624
Ala Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp Ser Lys	
195 200 205	

aag cag agc ttc gtg ggg atg ctg acc atc aca gac ttc atc ttg gtg	672
Lys Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile Leu Val	
210 215 220	
ctg cac cgc tat tac agg tcc ccc ctg gtc cag atc tac gag att gaa	720
Leu His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu Ile Glu	
225 230 235 240	
gaa cat aag att gag acc tgg agg gag atc tac ctt caa ggc tgc ttc	768
Glu His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly Cys Phe	
245 250 255	
aag cct ctg gtc tcc atc tct ccc aat gac agc ctg ttc gaa gct gtc	816
Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val	
260 265 270	
tac gcc ctc atc aag aac cgg atc cac cgc ctg ccg gtc ctg gac cct	864
Tyr Ala Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro	
275 280 285	
gtc tcc ggg gct gtg ctc cac atc ctc aca cat aag cgg ctt ctc aag	912
Val Ser Gly Ala Val Leu His Ile Leu Thr His Lys Arg Leu Leu Lys	
290 295 300	
ttc ctg cac atc ttt ggc acc ctg ctg ccc cgg ccc tcc ttc ctc tac	960
Phe Leu His Ile Phe Gly Thr Leu Leu Pro Arg Pro Ser Phe Leu Tyr	
305 310 315 320	
cgc acc atc caa gat ttg ggc atc ggc aca ttc cga gac ttg gcc gtg	1008
Arg Thr Ile Gln Asp Leu Gly Ile Gly Thr Phe Arg Asp Leu Ala Val	
325 330 335	
gtg ctg gaa acg gcg ccc atc ctg acc gca ctg gac atc ttc gtg gac	1056
Val Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe Val Asp	
340 345 350	
cgg cgt gtg tct gcg ctg cct gtg gtc aac gaa act gga cag gta gtg	1104
Arg Arg Val Ser Ala Leu Pro Val Val Asn Glu Thr Gly Gln Val Val	
355 360 365	
ggc ctc tac tct cgc ttt gat gtg atc cac ctg gct gcc caa caa aca	1152
Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln Thr	
370 375 380	
tac aac cac ctg gac atg aat gtg gga gaa gcc ctg agg cag cgg aca	1200
Tyr Asn His Leu Asp Met Asn Val Gly Glu Ala Leu Arg Gln Arg Thr	
385 390 395 400	
ctg tgt ctg gaa ggc gtc ctt tcc tgc cag ccc cac gag acc ttg ggg	1248
Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Thr Leu Gly	
405 410 415	
gaa gtc att gac cgg att gtc cgg gaa cag gtg cac cgc ctg gtg ctc	1296
Glu Val Ile Asp Arg Ile Val Arg Glu Gln Val His Arg Leu Val Leu	
420 425 430	



gtg gat gag acc cag cac ctt ctg ggc gtg gtg tcc ctc tct gac atc 1344  
Val Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser Asp Ile  
435 440 445

ctt cag gct ctg gtg ctc agc cct gct gga att gat gcc ctc ggg gcc 1392  
 Leu Gln Ala Leu Val Leu Ser Pro Ala Gly Ile Asp Ala Leu Gly Ala  
 450 455 460

tga gaaccttgga acctttgctc tcagggccacc tggcacacct ggaagccagt 1445

gaaggggagcc	gtggactcag	ctctcacttc	ccctcagccc	cacttgctgg	tctggctctt	1505
gttcaggtag	gctccgccc	gggcccctgg	cctcagcatc	agccccctcag	tctccctggg	1565
caccagatc	tcagactggg	gcaccctgaa	gatgggagtg	gccagctta	tagctgagca	1625
gccttgtgaa	atctaccagc	atcaagactc	actgtgggac	cactgctttg	tcccattctc	1685
agctgaaatg	atggagggcc	tcataagagg	ggaggacagg	gcctggagta	gaggccagat	1745
cagtgacgtg	ccttcaggac	ctccggggag	ttagagctgc	cctctctcag	ttcagttccc	1805
ccctgctgag	aatgtccctg	gaaggaagcc	agttaataaa	ccttggttgg	atggaatttg	1865
gagagtgc						1873

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<210> 28
<211> 464
<212> PRT
<213> Sus scrofa
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<400>	28															
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Val	Thr	Thr	Ser	Ser	Glu	Arg	Ser	His	Gly	Asp	Gln	Gly	Asn	Lys	Ala	
			20					25					30			
Ser	Arg	Trp	Thr	Arg	Gln	Glu	Asp	Val	Glu	Glu	Gly	Gly	Pro	Pro	Gly	
		35					40					45				
Pro	Arg	Glu	Gly	Pro	Gln	Ser	Arg	Pro	Val	Ala	Glu	Ser	Thr	Gly	Gln	
		50				55					60					
Glu	Ala	Thr	Phe	Pro	Lys	Ala	Thr	Pro	Leu	Ala	Gln	Ala	Ala	Pro	Leu	
					70					75					80	
Ala	Glu	Val	Asp	Asn	Pro	Pro	Thr	Glu	Arg	Asp	Ile	Leu	Pro	Ser	Asp	
				85					90					95		
Cys	Ala	Ala	Ser	Ala	Ser	Asp	Ser	Asn	Thr	Asp	His	Leu	Asp	Leu	Gly	
			100					105					110			
Ile	Glu	Phe	Ser	Ala	Ser	Ala	Ala	Ser	Gly	Asp	Glu	Leu	Gly	Leu	Val	
			115				120					125				
Glu	Glu	Lys	Pro	Ala	Pro	Cys	Pro	Ser	Pro	Glu	Val	Leu	Leu	Pro	Arg	
			130			135				140						
Leu	Gly	Trp	Asp	Asp	Glu	Leu	Gln	Lys	Pro	Gly	Ala	Gln	Val	Tyr	Met	
145				150						155					160	

15

```

His Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr Ser Ser
      165      170      175
Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala Phe Phe
      180      185      190
Ala Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp Ser Lys
      195      200      205
Lys Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile Leu Val
      210      215      220
Leu His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu Ile Glu
      225      230      235      240
Glu His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly Cys Phe
      245      250      255
Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val
      260      265      270
Tyr Ala Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro
      275      280      285
Val Ser Gly Ala Val Leu His Ile Leu Thr His Lys Arg Leu Leu Lys
      290      295      300
Phe Leu His Ile Phe Gly Thr Leu Leu Pro Arg Pro Ser Phe Leu Tyr
      305      310      315      320
Arg Thr Ile Gln Asp Leu Gly Ile Gly Thr Phe Arg Asp Leu Ala Val
      325      330      335
Val Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe Val Asp
      340      345      350
Arg Arg Val Ser Ala Leu Pro Val Val Asn Glu Thr Gly Gln Val Val
      355      360      365
Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln Thr
      370      375      380
Tyr Asn His Leu Asp Met Asn Val Gly Glu Ala Leu Arg Gln Arg Thr
      385      390      395      400
Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Thr Leu Gly
      405      410      415
Glu Val Ile Asp Arg Ile Val Arg Glu Gln Val His Arg Leu Val Leu
      420      425      430
Val Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser Asp Ile
      435      440      445
Leu Gln Ala Leu Val Leu Ser Pro Ala Gly Ile Asp Ala Leu Gly Ala
      450      455      460

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&lt;210&gt; 29

&lt;211&gt; 2115

&lt;212&gt; ADN

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1395)

&lt;400&gt; 29

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atg agc ttc cta gag caa gaa aac agc agc tca tgg cca tca cca gct 48
Met Ser Phe Leu Glu Gln Glu Asn Ser Ser Ser Trp Pro Ser Pro Ala
  1              5              10              15

gtg acc agc agc tca gaa aga atc cgt ggg aaa cgg agg gcc aaa gcc 96
Val Thr Ser Ser Ser Glu Arg Ile Arg Gly Lys Arg Arg Ala Lys Ala
      20              25              30

```

ttg aga tgg aca agg cag aag tcg gtg gag gaa ggg gag cca cca ggt	144
Leu Arg Trp Thr Arg Gln Lys Ser Val Glu Glu Gly Glu Pro Pro Gly	
35 40 45	
cag ggg gaa ggt ccc cgg tcc agg cca act gct gag tcc acc ggg ctg	192
Gln Gly Glu Gly Pro Arg Ser Arg Pro Thr Ala Glu Ser Thr Gly Leu	
50 55 60	
gag gcc aca ttc ccc aag acc aca ccc ttg gct caa gct gat cct gcc	240
Glu Ala Thr Phe Pro Lys Thr Thr Pro Leu Ala Gln Ala Asp Pro Ala	
65 70 75 80	
ggg gtg ggc act cca cca aca ggg tgg gac tgc ctc ccc tct gac tgt	288
Gly Val Gly Thr Pro Pro Thr Gly Trp Asp Cys Leu Pro Ser Asp Cys	
85 90 95	
aca gcc tca gct gca ggc tcc agc aca gat gat gtg gag ctg gcc acg	336
Thr Ala Ser Ala Ala Gly Ser Ser Thr Asp Asp Val Glu Leu Ala Thr	
100 105 110	
gag ttc cca gcc aca gag gcc tgg gag tgt gag cta gaa ggc ctg ctg	384
Glu Phe Pro Ala Thr Glu Ala Trp Glu Cys Glu Leu Glu Gly Leu Leu	
115 120 125	
gaa gag agg cct gcc ctg tgc ctg tcc ccg cag gcc cca ttt ccc aag	432
Glu Glu Arg Pro Ala Leu Cys Leu Ser Pro Gln Ala Pro Phe Pro Lys	
130 135 140	
ctg ggc tgg gat gac gaa ctg cgg aaa ccc ggc gcc cag atc tac atg	480
Leu Gly Trp Asp Asp Glu Leu Arg Lys Pro Gly Ala Gln Ile Tyr Met	
145 150 155 160	
cgc ttc atg cag gag cac acc tgc tac gat gcc atg gca act agc tcc	528
Arg Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr Ser Ser	
165 170 175	
aag cta gtc atc ttc gac acc atg ctg gag atc aag aag gcc ttc ttt	576
Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala Phe Phe	
180 185 190	
gct ctg gtg gcc aac ggt gtg cgg gca gcc cct cta tgg gac agc aag	624
Ala Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp Ser Lys	
195 200 205	
aag cag agc ttt gtg ggg atg ctg acc atc act gac ttc atc ctg gtg	672
Lys Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile Leu Val	
210 215 220	
ctg cat cgc tac tac agg tcc ccc ctg gtc cag atc tat gag att gaa	720
Leu His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu Ile Glu	
225 230 235 240	
caa cat aag att gag acc tgg agg gag atc tac ctg caa ggc tgc ttc	768
Gln His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly Cys Phe	
245 250 255	

aag cct ctg gtc tcc atc tct cct aat gat agc ctg ttt gaa gct gtc	816
Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val	
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tac acc ctc atc aag aac cgg atc cat cgc ctg cct gtt ctt gac ccg	864
Tyr Thr Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro	
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Val Ser Gly Asn Val Leu His Ile Leu Thr His Lys Arg Leu Leu Lys	
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325 330 335	
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Val Leu Glu Thr Ala Pro Ile Leu Thr Ala Leu Asp Ile Phe Val Asp	
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Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln Gln Thr	
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Tyr Asn His Leu Asp Met Ser Val Gly Glu Ala Leu Arg Gln Arg Thr	
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Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Ser Leu Gly	
405 410 415	
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Glu Val Ile Asp Arg Ile Ala Arg Glu Gln Val His Arg Leu Val Leu	
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Val Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser Asp Ile	
435 440 445	
ctt cag gca ctg gtg ctc agc cct gct ggc atc gat gcc ctc ggg gcc	1392
Leu Gln Ala Leu Val Leu Ser Pro Ala Gly Ile Asp Ala Leu Gly Ala	
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 gagtccctcc tccattcttg tccagaaaac tccttagctc tcgcagtgc ccatgttctt 1985  
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&lt;210&gt; 30

&lt;211&gt; 464

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 30

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			20					25					30		
Leu	Arg	Trp	Thr	Arg	Gln	Lys	Ser	Val	Glu	Glu	Gly	Glu	Pro	Pro	Gly
		35					40					45			
Gln	Gly	Glu	Gly	Pro	Arg	Ser	Arg	Pro	Thr	Ala	Glu	Ser	Thr	Gly	Leu
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Arg	Phe	Met	Gln	Glu	His	Thr	Cys	Tyr	Asp	Ala	Met	Ala	Thr	Ser	Ser
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Lys	Leu	Val	Ile	Phe	Asp	Thr	Met	Leu	Glu	Ile	Lys	Lys	Ala	Phe	Phe
			180					185					190		

Ala Leu Val Ala Asn Gly Val Arg Ala Ala Pro Leu Trp Asp Ser Lys  
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 Lys Gln Ser Phe Val Gly Met Leu Thr Ile Thr Asp Phe Ile Leu Val  
 210 215 220  
 Leu His Arg Tyr Tyr Arg Ser Pro Leu Val Gln Ile Tyr Glu Ile Glu  
 225 230 235 240  
 Gln His Lys Ile Glu Thr Trp Arg Glu Ile Tyr Leu Gln Gly Cys Phe  
 245 250 255  
 Lys Pro Leu Val Ser Ile Ser Pro Asn Asp Ser Leu Phe Glu Ala Val  
 260 265 270  
 Tyr Thr Leu Ile Lys Asn Arg Ile His Arg Leu Pro Val Leu Asp Pro  
 275 280 285  
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 Arg Arg Val Ser Ala Leu Pro Val Asn Glu Cys Gly Gln Val Val  
 355 360 365  
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 Glu Val Ile Asp Arg Ile Ala Arg Glu Gln Val His Arg Leu Val Leu  
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&lt;210&gt; 31

&lt;211&gt; 2022

&lt;212&gt; ADN

&lt;213&gt; Sus scrofa

&lt;400&gt; 31

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20

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&lt;210&gt; 32

&lt;211&gt; 514

&lt;212&gt; PRT

&lt;213&gt; Sus scrofa

&lt;400&gt; 32

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Arg Gly Gly Trp Glu Leu Glu Gln Leu Arg Pro Glu Gly Arg Gly Pro
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```

Thr Thr Ala Asp Thr Pro Ser Trp Ser Ser Leu Gly Gly Pro Lys His
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Gln Glu Met Ser Phe Leu Glu Gln Gly Glu Ser Arg Ser Trp Pro Ser
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Arg Ala Val Thr Thr Ser Ser Glu Arg Ser His Gly Asp Gln Gly Asn
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```

Lys Ala Ser Arg Trp Thr Arg Gln Glu Asp Val Glu Glu Gly Gly Pro
      85              90              95

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```

Pro Gly Pro Arg Glu Gly Pro Gln Ser Arg Pro Val Ala Glu Ser Thr
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Gly Gln Glu Ala Thr Phe Pro Lys Ala Thr Pro Leu Ala Gln Ala Ala
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Pro Leu Ala Glu Val Asp Asn Pro Pro Thr Glu Arg Asp Ile Leu Pro
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Ser Asp Cys Ala Ala Ser Ala Ser Asp Ser Asn Thr Asp His Leu Asp
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 180 185 190  
 Pro Arg Leu Gly Trp Asp Asp Glu Leu Gln Lys Pro Gly Ala Gln Val  
 195 200 205  
 Tyr Met His Phe Met Gln Glu His Thr Cys Tyr Asp Ala Met Ala Thr  
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 Ser Ser Lys Leu Val Ile Phe Asp Thr Met Leu Glu Ile Lys Lys Ala  
 225 230 235 240  
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 290 295 300  
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 385 390 395 400  
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 Val Val Gly Leu Tyr Ser Arg Phe Asp Val Ile His Leu Ala Ala Gln  
 420 425 430  
 Gln Thr Tyr Asn His Leu Asp Met Asn Val Gly Glu Ala Leu Arg Gln  
 435 440 445  
 Arg Thr Leu Cys Leu Glu Gly Val Leu Ser Cys Gln Pro His Glu Thr  
 450 455 460



22

Leu Gly Glu Val Ile Asp Arg Ile Val Arg Glu Gln Val His Arg Leu  
 465 470 475 480

Val Leu Val Asp Glu Thr Gln His Leu Leu Gly Val Val Ser Leu Ser  
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Asp Ile Leu Gln Ala Leu Val Leu Ser Pro Ala Gly Ile Asp Ala Leu  
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<211> 40  
<212> DNA

<213> Artificial Sequence

<220>

<223> Primer

<400> 42

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40

Attorney's Office No.: 11145-023US1

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Leif Andersson et al.                      Art Unit : Unknown  
Serial No. : 10/070,794                                      Examiner : Unknown  
Filed : March 8, 2002  
Title : VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES  
ENCODING THE SAME, AND USES THEREOF

**BOX PCT**

Commissioner for Patents

Washington, DC 20231

PRELIMINARY AMENDMENT

Prior to examination, please amend the application as follows:

In the specification:

Replace the paragraph beginning at page 30, line 35, with the following rewritten paragraph:

— A part of *PRKAG3* including codon 41 was amplified in 10  $\mu$ l reactions containing 100 ng genomic DNA, 0.2 mM dNTPs, 1.5 mM MgCl<sub>2</sub>, 4.0 pmol of both forward (AMPKG3F3:5' -GGAGCAAATGTGCAGACAAG-3') (SEQ ID NO:33) and reverse (AMPKG3R2:5' -CCCACGAAGCTCTGCTTCTT-3') (SEQ ID NO:34) primer, 10% DMSO, 1 U of *Taq* DNA polymerase and reaction buffer (ADVANCED BIOTECH, London, UK). The cycling conditions included an initial incubation at 94° for 5 min followed by 3 cycles at 94°C (1 min), 57°C (1 min) and 72°C (1 min), and 35 cycles of 94°C (20 sec), 55°C (30 sec) and 72°C (30 sec). Allele discrimination at nucleotide position 122 was done using the oligonucleotide ligation assay (OLA, LANDEGREN, *et al.*, Science, 241, 1077-1080, 1988). The OLA method was carried out as a gel-based assay. Each 10  $\mu$ l OLA reaction contained 0.5 pmol of each probe SNPRN-A (5'Hex-TGGCCAACGGCGTCCA-3') (SEQ ID NO:35), SNPRN-G (5'ROX-GGCCAACGGCGTCCG-3') (SEQ ID NO:36) and SNRPN-Common (5'phosphate-AGCGGCACCTTTGTGAAAAAAAAAAA-3') (SEQ ID NO:37), 1.5 U of thermostable AMPLIGASE and reaction buffer (EPICENTRE TECHNOLOGIES, Madison, WI) and 0.5  $\mu$ l of

CERTIFICATE OF MAILING BY EXPRESS MAIL

Express Mail Label No. EV115424896USOctober 4, 2002

Date of Deposit

Applicant : Leif Andersson et al.  
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Page : 2

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the AMPKG3F3/AMPKG3R2 PCR product. After an initial incubation at 95°C for 5 min, the following thermocycling profile was repeated 10 times: denaturation at 95°C (30 sec), and probe annealing and ligation at 55°C (90 sec). After OLA cycling, 1 µl of product was heat denatured at 94°C (3 min), cooled on ice, and loaded onto 6% polyacrylamide denaturing gel for electrophoresis on an ABI377 DNA sequencer (PERKIN ELMER, Foster City, USA). The resulting fragment lengths and peak fluorescence were analyzed using GENESCAN software (PERKIN ELMER, Foster City, USA). --

Replace the paragraph beginning at page 32, line 5, with the following rewritten paragraph:

-- A microsatellite 127B1 (*MS127B1*) was cloned from BAC 127G7 containing pig *PRKAG3*. The BAC clone was digested with *Sau3AI* and the restriction fragments subcloned into the *Bam*HI site of pUC18. The resulting library was probed with a (CA)<sub>15</sub> oligonucleotide probe labeled with [γ-32P]-dATP. Strongly hybridizing clones were sequenced and primers for PCR amplification of microsatellite loci were designed. Ten µl PCR reactions were performed containing 100 ng genomic DNA, 0.2 mM dNTPs, 1.5 mM MgCl<sub>2</sub>, 4.0 pmol of both forward (*MS127B1F*:5' -Fluorescein-CAAACCTCTTCTAGGCGTGT-3') (SEQ ID NO:38) and reverse (*MS127B1R*:5' -GTTTCTGGAACCTCCATATGCCATGG-3') (SEQ ID NO:39) primers, and 1 U of *Taq* DNA polymerase and reaction buffer (ADVANCED BIOTECH, London, UK). The cycling conditions included an initial incubation at 94°C for 5 min followed by 3 cycles at 94°C (1 min), 57°C (1 min) and 72°C (1 min), and 35 cycles of 94°C (20 sec), 55°C (30 sec) and 72°C (30 sec). The PCR products (0.3 µl) were separated using 4% polyacrylamide denaturing gel electrophoresis on an ABI377 DNA sequencer (PERKIN ELMER, Foster City, USA). The resulting fragment lengths were analyzed using the GENESCAN and GENOTYPER software (PERKIN ELMER, Foster City, USA). --

Replace the paragraph beginning at page 33, line 13, with the following rewritten paragraph:

-- Sequence of primers used to amplify the *RN* mutation region:

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RNU: 5' GGGAACGATTCACCCTCAAC 3' (SEQ ID NO:40)  
RNL: 5' AGCCCCTCCTCACCCACGAA 3' (SEQ ID NO:41) --

Replace the paragraph beginning at page 33, line 24, with the following rewritten paragraph:

-- The sequence of the RNL modified primer including a control tail with a *Bsr*BI site is:

RNL<sub>Bsr</sub>A14: 5' A<sub>5</sub>C<sub>2</sub>A<sub>7</sub>CCGCTCAGCCCCTCCTCACCCACGAA 3'  
(SEQ ID NO:42) --

Please replace the sequence listing with the substitute sequence listing.

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REMARKS

Applicants have amended the specification to incorporate sequence identifiers and correct typographical errors. Applicants have amended the sequence listing to include sequence identifiers for the sequences on pages 31-33. No new matter has been added.

Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be examined. Payment is enclosed for the Petition for Extension of Time and declaration surcharge fees. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: \_\_\_\_\_

10/4/02



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Reg. No. 42,600

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Facsimile: (612) 288-9696

Applicant : Leif Andersson et al.  
Serial No. : 10/070,794  
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**Version with markings to show changes made**

In the specification:

Paragraph beginning at page 30, line 35, has been amended as follows:

A part of *PRKAG3* including codon 41 was amplified in 10 µl reactions containing 100 ng genomic DNA, 0.2 mM dNTPs, 1.5 mM MgCl<sub>2</sub>, 4.0 pmol of both forward (AMPKG3F3:5' – GGAGCAAATGTGCAGACAAG-3') (SEQ ID NO:33) and reverse (AMPKG3R2:5' – CCCACGAAGCTCTGCTTCTT-3') (SEQ ID NO:34) primer, 10% DMSO, 1 U of *Taq* DNA polymerase and reaction buffer (ADVANCED BIOTECH, London, UK). The cycling conditions included an initial incubation at 94° for 5 min followed by 3 cycles at 94°C (1 min), 57°C (1 min) and 72°C (1 min), and 35 cycles of 94°C (20 sec), 55°C (30 sec) and 72°C (30 sec). Allele discrimination at nucleotide position 122 was done using the oligonucleotide ligation assay (OLA, LANDEGREN, *et al.*, Science, 241, 1077-1080, 1988). The OLA method was carried out as a gel-based assay. Each 10 µl OLA reaction contained 0.5 pmol of each probe SNPRN-A (5'Hex-TGGCCAACGGCGTCCA-3') (SEQ ID NO:35), SNPRN-G (5'ROX-GGCCAACGGCGTCCG-3') (SEQ ID NO:36) and SNRPN-Common (5'phosphate-AGCGGCACCTTTGTGAAAAAAAAAAAA-3') (SEQ ID NO:37), 1.5 U of thermostable AMPLIGASE and reaction buffer (EPICENTRE TECHNOLOGIES, Madison, WI) and 0.5 µl of the AMPKG3F3/AMPKG3R2 PCR product. After an initial incubation at 95°C for 5 min, the following thermocycling profile was repeated 10 times: denaturation at 95°C (30 sec), and probe annealing and ligation at 55°C (90 sec). After OLA cycling, 1 µl of product was heat denatured at 94°C (3 min), cooled on ice, and loaded onto 6% polyacrylamide denaturing gel for electrophoresis on an ABI377 DNA sequencer (PERKIN ELMER, Foster City, USA). The resulting fragment lengths and peak fluorescence were [analysed] analyzed using GENESCAN software (PERKIN ELMER, Foster City, USA).

Paragraph beginning at page 32, line 5, has been amended as follows:

A microsatellite 127B1 (*MS127B1*) was cloned from BAC 127G7 containing pig *PRKAG3*. The BAC clone was digested with *Sau3AI* and the restriction fragments subcloned



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into the *Bam*HI site of pUC18. The resulting library was probed with a (CA)<sub>15</sub> oligonucleotide probe [labelled] labeled with [ $\gamma$ -32P]-dATP. Strongly [hybridising] hybridizing clones were sequenced and primers for PCR amplification of microsatellite loci were designed. Ten  $\mu$ l PCR reactions were performed containing 100 ng genomic DNA, 0.2 mM dNTPs, 1.5 mM MgCl<sub>2</sub>, 4.0 pmol of both forward (MS127B1F:5' -Fluorescein-CAAACCTCTTCTAGGCGTGT-3') (SEQ ID NO:38) and reverse (MS127B1R:5' -GTTTCTGGAACTTCCATATGCCATGG-3') (SEQ ID NO:39) primers, and 1 U of *Taq* DNA polymerase and reaction buffer (ADVANCED BIOTECH, London, UK). The cycling conditions included an initial incubation at 94°C for 5 min followed by 3 cycles at 94°C (1 min), 57°C (1 min) and 72°C (1 min), and 35 cycles of 94°C (20 sec), 55°C (30 sec) and 72°C (30 sec). The PCR products (0.3  $\mu$ l) were separated using 4% polyacrylamide denaturing gel electrophoresis on an ABI377 DNA sequencer (PERKIN ELMER, Foster City, USA). The resulting fragment lengths were [analysed] analyzed using the GENESCAN and GENOTYPER software (PERKIN ELMER, Foster City, USA).

Paragraph beginning at page 33, line 13, has been amended as follows:

Sequence of primers used to amplify the *RN* mutation region:

RNU: 5' GGGAACGATTCACCCTCAAC	3' ( <u>SEQ ID NO:40</u> )
RNL: 5' AGCCCCTCCTCACCCACGAA	3' ( <u>SEQ ID NO:41</u> )

Paragraph beginning at page 33, line 24, has been amended as follows:

The sequence of the RNL modified primer including a control tail with a *Bsr*BI site is:

RNLBsrA14: 5' A<sub>5</sub>C<sub>2</sub>A<sub>7</sub>CCGCTCAGCCCCTCCTCACCCACGAA 3'  
(SEQ ID NO:42)

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Leif Andersson et al.                      Art Unit : Unknown  
Serial No. : 10/070,794                                  Examiner : Unknown  
Filed : March 8, 2002  
Title : VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES  
ENCODING THE SAME, AND USES THEREOF

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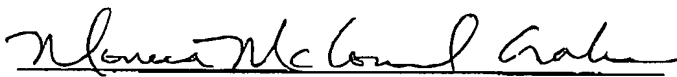
PETITION FOR TWO-MONTH EXTENSION OF TIME

Pursuant to 37 CFR §1.136, applicants hereby petition that the period for response to the action dated June 4, 2002, be extended for two months to and including October 4, 2002.

Payment is enclosed for the required fee of \$200. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 10/4/02

  
Monica McCormick Graham, Ph.D.  
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Attorney's Docket No. 11145-023US1	Express Mail Label No. EV115424896US	Mailing Date October 4, 2002	<b>For PTO Use Only</b> Do Not Mark in This Area
Application No. 10/070,794	Filing Date March 8, 2002	Attorney/Secretary Init MMG/kjs	
Title of the Invention <b>VARIANTS OF THE GAMMA CHAIN OF AMPK, DNA SEQUENCES ENCODING THE SAME, AND USES THEREOF</b>			
Applicant <b>Leif Andersson et al.</b>			
Enclosures - Response to Notification of Missing Requirements (1 page) - Copy of Notification of Missing Requirements (2 pages) - Combined Declaration and Power of Attorney (4 pages) - Preliminary Amendment (6 pages) - Verified Statement Under 37 CFR §1.821(f) (1 page) - CRF Diskette of Sequence Listing - Paper Copy of the Sequence Listing (24 pages) - Petition for Two-Month Extension of Time (1 page) - Check for \$265			